

Conference Paper

Comparative Study of Hardiness Referring to Adolescents with Musculoskeletal Disorders and Adolescents with Normal Development

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Abstract

The article presents the results of the research into hardiness of adolescents with musculoskeletal disorders (MSDs) and those with normal development. The choice of subjects with MSDs was made due to their presence in the general public, in fact, the incidence of inborn and acquired MSDs is about 5-7% in children (N.M. Nazarova, 2002). 25 adolescents with MSDs studying at schools which have adaptive standards of education took part in the research, and 50 adolescents with normal development studying at general education schools. The research used the following methods: modified Maddi's Hardiness Survey (adapted by D.A. Leontiev, E.I. Rasskazova); H. Eysenck Personality Questionnaire (EPI); Dembo-Rubinstein Method of Self-esteem Measurement (modified by A.M. Prikhodzhan); questionnaire 'Ways of Coping Checklist' (WCC) of R. Lazarus and S. Folkman (adapted by L.I. Wasserman). Such psychological correlates of hardiness as self-esteem, claims, and extroversion - neuroticism, ways of coping, are used to clarify the specificity of hardiness manifestation in test subjects. As the result of the study, the hypothesis that the presence of MSDs will have an influence on the level of hardiness of adolescence was confirmed, as hardiness components are higher in children with MSDs than in those with normal development, 95,5 and 77,6 respectively. Also, the hypothesis that children with MSDs have a high level of neuroticism was confirmed. However, adolescents without MSDs studying at 8th grade have an even higher level of neuroticism, the study finds.

Keywords: hardiness, adolescents with MSDs, adolescents with normal development, ways of coping, self-esteem, claims, extraversion, neuroticism.

1. Relevance of Research

In the modern world, our unstable and constantly changing life and the uncertainty of tomorrow have a negative effect on the physical as well as the psychological health of adolescents [5, 10, 13, 14].

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The study of theoretical material on the phenomenon of «hardiness» proves that there are blind spots which require further research in this area. This is proven by the controversial attitude towards the term «hardiness» itself, as well as the difficulty of defining and explaining what it means.

Hardiness as a psychological phenomenon is multifaceted and can manifest itself in different ways in a person's life. S. Maddi and C. Kobasa define hardiness as a personal trait which reflects the psychological health of an individual and includes 3 components: commitment, control, and challenge [16].

Various factors have an impact on the manifestation of hardiness, including external, i.e. social and cultural (family, school, level of education, society on the whole, etc.); internal or personal (values, traits of character, habits, temperament, etc.); also biological (age and gender). Yet, the aforementioned factors do not affect this phenomenon separately but are interconnected and influence each other, complementing the effects of one another.

Studying the peculiarities of age influence on hardiness is of special interest, to our mind, as was noted by many other researchers [12, 15, 18]. S. Maddi found out that a person's characteristic curve of activation is formed in the early stages of life and after that, it does not significantly change. The main period of development and formation of components of hardiness is childhood and adolescence, and it is important to note, that child-parent relationship is a determining factor. The author stressed that in the subsequent age stages hardiness development is not as quick as in the childhood-adolescence stage. Obviously, hardiness development in the future is possible, though its pace will not be as fast [16].

Consequently, the study of hardiness manifestation in adolescents is quite relevant. Moreover, the presence of disabilities in adolescents must have a considerable effect on their hardiness. It is especially topical for adolescents with MSDs since these peculiarities are manifested externally and are likely to have an influence on their level of hardiness. It goes without saying that a high level of hardiness can become a certain reserve for socio-psychological adaptation of individuals with MSDs to independent life, and a low one, by contrast, a signal for the necessity of psycho-correction.

The incidence of inborn and acquired MSDs and physical traumas is about 5-7% in children (N.M. Nazarova, 2002), wherein 89 % of those cases are children with Cerebral palsy aftermaths. All this makes a further detailed study of their psychological development, choice of ways and methods of correction and compensation of existing disorders necessary.

Researchers who conduct studies into subjects with MSDs [3, 8, 9, 17], as a rule, do not look into the problem of their hardiness. However, when describing personality traits of children and adolescents of this group, we can note some indications of components of hardiness.

Traditionally, two groups of children with cerebral palsy (CP) are distinguished, where *the first group* is described as individuals with adequate, not high self-esteem and low level of claims. At school, the level of requirements for a child is getting higher and a negative attitude can be formed as a result of teacher's reprimands, comments about slowness, insufficient development of skills of self-care, which traumatizes children and makes them stubborn, irritable and aggressive. Therefore, a conflict between the child's self-esteem and how they are perceived by others emerges as a consequence of which feelings of inferiority are formed.

The second group is characterized by high self-esteem and high level of claims which is not adequate for their abilities. Such self-esteem is rooted in the excessive love of parents, indulgent attitude because of their disability. Such children display different variants of affective behavior, trying to maintain the same level of self-esteem and claims that they are used to at home at school, thus a protest to the unsatisfied need of the desired attitude to them of other people emerges. This protest manifests itself in negativity, bitterness, conflicts with children and adults, distancing themselves from the peer group. The child becomes shy and develops defense mechanisms.

In the research conducted by Mamaichuk I.I., Pyatakova G.V. [8] such traits of character of children with CP as instability of neuropsychological processes, high level of state and trait anxiety, liability to frustration are outlined.

Nevertheless, it should be taken into account that adequate self-esteem and volitional qualities of adolescents with MSDs are likely to increase their hardiness.

The aim of this research is to determine individual psychological peculiarities of adolescents with MSDs which make up hardiness.

The hypotheses of this research are as follows: the presence of MSDs will have an effect of the level of hardiness of adolescents; «Neuroticism» will be higher in adolescents with MSDs than in those with normal development.

Methods of research: modified Maddi's Hardiness Survey (adapted by D.A. Leontiev, E.I. Rasskazova); H. Eysenck personality questionnaire (EPI); Dembo-Rubinstein Method of Self-esteem Measurement (modified by A.M. Prikhozhan); questionnaire 'Ways of Coping Checklist' (WCC) of R. Lazarus and S. Folkman (adapted by L.I. Wasserman).

The sample consisted of two groups of subjects: adolescents with MSDs and adolescents with normal development. The former consisted of pupils of 8-10 grades, studying in the State Public Educational Institution of Sverdlovsk region (SPEI SR) 'Yekaterinburg boarding-school Everest, which implements adaptive basic general education programmes' and SPEI SR 'Boarding-school № 17, which implements adaptive basic general education programmes'. 25 adolescents took part in the study in total (6 pupils of 8th grade, 7 of 9th grade, 12 of 10th grade; 9 female and 16 male subjects).

The second group consisted of 50 adolescents, studying in the 8th grade (28 pupils) and 9th grade (22 pupils) of Municipal Autonomous Educational Institution Gymnasium № 2 of Yekaterinburg.

Analysis of the results of the empirical study. Based on *Maddi's Hardiness Survey* a negative difference in «*Commitment*» was identified. Adolescents with MSDs have higher results than those with normal development. It should also be noted, that the difference among pupils of 8th grade was more considerable. We can assume that adolescents with MSDs have a higher level as a result of their desire to be liked, be equal to their peers.

As far as «*Control*» is concerned, its level is also higher in subjects with MSDs than in those with normal development in both 8th and 9th grades.

The level of «*Challenge*» of both groups in 8th grade is equal, whereas in 9th grade the subjects with normal development have an even higher result.

The level of hardiness of pupils with MSDs in 8th and 9th grades is higher than of those with normal development. The results are presented in table 1.

TABLE 1: Comparison of average values of 3C's according to Maddi's Hardiness Survey among adolescents with MSDs and adolescents with normal development.

	Adolescents with MSDs		Adolescents with normal development		Difference	
	8	9	8	9	8	9
Grade						
Commitment	42,3	35,1	32,1	33,8	-10,2	- 1,3
Control	33,3	32,8	28,7	30,2	- 4,6	- 2,6
Challenge	17,8	14,7	16,7	17,6	-1,1	2,9
Hardiness	92,5	82,7	77,6	81,6	- 14,9	- 1,1

Looking at the results of H. Eysenck personality questionnaire (EPI) we can see that average values on the scale of extraversion are typical for adolescents with MSDs, moreover, all samples lack adolescents with «really high» level of extraversion. An increase in introversion can be observed as pupils progress into high school.

On the scale of «neuroticism», 8th-grade students have high indexes. However, 9th and 10th-grade students have a more prominent «very high» level of neuroticism which can indicate increased emotionality, self-doubt, inability to form and maintain stable relationships with people.

The level of extroversion in pupils of 8th and 9th grades both with MSDs and with normal development is the same (see data in table 2). At the same time, the most discernable difference according to the level of neuroticism can be observed among students of the 8th grade (adolescents without MSDs have a higher level of neuroticism), while the difference among the students of 9th grade is insignificant.

TABLE 2: Comparison of average values of H. Eysenck personality questionnaire among adolescents with MSDs and adolescents with normal development.

	Adolescents with MSDs		Adolescents with normal development		Difference	
	8	9	8	9	8	9
Grade	8	9	8	9	8	9
Extraversion	13,16	12	12,91176	11,93151	-0,25	-0,07
Neuroticism	11,33	12,85	12,82353	12,26027	1,49	-0,59

When comparing the average values of *Dembo-Rubinstein Method of Self-esteem Measurement*, it can be seen that pupils of 8th grade with MSDs have overall higher results in most parameters of self-esteem than those without MSDs, by contrast, the situation is the opposite with the 9th-grade students. Special attention should be paid to the «happy» parameter in the level of self-esteem and claims: results of students without MSDs of all forms is higher than of those with MSDs. The results can be seen in table 3.

Results of questionnaire '*Ways of Coping Checklist*' (WCC) of R. Lazarus and S. Folkman demonstrated that pupils of 8th, 9th and 10th grades with MSDs have average values in all coping styles. However, at the same time, 8th-grade students have low scores in the following ways of coping: looking for social support and planful problem solving, which may be connected with the fact that a child is yet unaware of who he can trust and has not learned to plan how to solve their problems.

9th-grade pupils show a low level of self-control which is exactly the thing that involves making an effort to control one's feelings and actions, lack of thereof means that pupils cannot always avoid impulsive emotional actions. The remaining parameters have average values. The results are presented in table 4.

TABLE 3: Comparison of average values of Dembo-Rubinstein Method of Self-esteem Measurement among adolescents with MSDs and adolescents normal development.

		Adolescents with MSDs		Adolescents with normal development		Difference	
		8a	9a	8	9	8	9
Self-esteem	capable	89,83	83,15	79,059	79,30	-10,77	-3,84
	others' approval	74,83	73,57	68,13	74,20	-6,71	0,63
	self-confident	92,83	65	71,49	70,29	-21,35	5,29
	volitional	65,5	72,57	72,08	74,01	6,58	1,44
	high level of achievement	78,83	65,14	71,45	71,46	-7,37	6,32
Claims	happy	65,33	66,28	76,56	78,67	11,23	12,39
	capable	83,83	97,14	94,71	95,62	10,87	-1,53
	others' approval	98,5	90,86	89,31	91,89	-9,19	1,03
	self-confident	82	89,71	93,29	94,98	11,29	5,27
	volitional	55	91,71	93	93,52	38	1,81
	high level of achievement	82,5	85,57	92,88	95,27	10,38	9,70
	happy	98	87,42	95,65	96,16	-2,35	8,73

Comparative analysis of the average values of the Mann-Whitney U test among female and male students with MSDs revealed differences in only one trait - «Neuroticism». Females have a higher result (16,33) than males (11,00) probably due to the fact that they find it harder to cope with changes.

Correlation analysis of components of hardiness and such parameters as extroversion and neuroticism revealed an inverse correlation between neuroticism and hardiness. That is to say that the higher the level of neuroticism, the lower the level of hardiness, which is easily explicable, as neuroticism is characterized by emotional instability, anxiety, and low self-respect.

Having studied the correlation between components of hardiness and the level of self-esteem and claims in female students with MSDs, a conclusion can be drawn that commitment depends on the level of self-esteem. The higher level of commitment one has, the higher their self-esteem is, which is to be expected since a committed person enjoys doing what they are doing which leads to their self-esteem growth.

There were no significant correlations between hardiness components and ways of coping among female students.

TABLE 4: Percentage of pupils with MSDs of 8th, 9th, 10th grades with different levels of intensity coping (%).

Scale	Level	8 grade	9 grade	10 grade
Confrontive Coping	low level	0,0	14,3	0,0
	medium level	83,3	71,4	66,7
	high level	16,7	14,3	33,3
Distancing	low level	33,3	0,0	0,0
	medium level	66,7	85,7	58,3
	high level	0,0	14,3	41,7
Self-controlling	low level	33,3	57,1	0,0
	medium level	66,7	42,9	75,0
	high level	0,0	0,0	25,0
Seeking Social Support	low level	50,0	28,6	0,0
	medium level	50,0	71,4	83,3
	high level	0,0	0,0	16,7
Accepting Responsibility	low level	16,7	14,3	25,0
	medium level	66,7	85,7	41,7
	high level	16,7	0,0	33,3
Escape-Avoidance	low level	33,3	14,3	16,7
	medium level	50,0	71,4	50,0
	high level	16,7	14,3	33,3
Planful Problem Solving	low level	66,7	28,6	0,0
	medium level	16,7	57,1	83,3
	high level	16,7	14,3	16,7
Positive Reappraisal	low level	33,3	14,3	16,7
	medium level	66,7	57,1	41,7
	high level	0,0	28,6	41,7

Speaking about male students, a negative correlation between hardiness components, extraversion, and neuroticism was observed. The lower the level of commitment, control, risk and hardiness, the higher the level of neuroticism is.

Moreover, a direct correlation between the level of self-esteem and control was detected, which means that latter has a positive effect on the former.

Commitment has an inverse correlation with such ways of coping as confrontation, distancing, seeking social support, escape-avoidance. As can be seen from the data, «seeking social support» coping style has an inverse correlation not only with the scale of commitment, but also control and hardiness, meaning that the more social support one has, the lower the commitment, control, and hardiness, which proves that such a phenomenon as overprotection will not be conducive to the development of hardiness.

Two-way analysis of variance according to Fisher's F-distribution factor allowed us to determine that there is no significant influence of gender and hardiness on ways of coping, meaning that the coping styles the respondents apply do not depend on their gender and hardiness.

However, gender and hardiness are connected with one way of coping - escape-avoidance (13,000, differences are relevant at the level of 0,05).

2. Conclusions

The following peculiarities of adolescents with MSDs can be distinguished as the result of the study:

1. Components of hardiness: commitment and control of adolescents with MSDs are higher than of those with normal development. This might be connected with the fact that such teenagers are always tense, mobilizing all their effort to be successful.
2. Adolescents with MSDs are high in «neuroticism», but those with normal development in 8th grade have even higher results. This could be explained by socio-psychological circumstances in public schools, where there are many pupils and psychologists are unable to help each individual.
3. On all scales, students of 8th grade have a predominantly high level of self-esteem and claims. This may mean that adolescents with MSDs are «cut off» from the external experience, whereas the high level of claims, on the contrary, may indicate that a teenager is ambitious. On the whole, a general tendency can be observed that 10th-grade students are capable of more adequately assessing their own abilities. 8th-grade pupils with MSDs have a lower level of self-esteem than those with normal development. The parameter «happy» should be paid special attention to since here the indexes of pupils with normal development are higher than of those with MSDs.
4. Girls are higher in neuroticism than boys. An inverse correlation between neuroticism and hardiness can also be observed for both genders, mainly, the higher the level of neuroticism, the lower the level of hardiness. Interestingly, neuroticism in male students has an inverse correlation with all hardiness components, which once again proves that neuroticism has an impact on all other parameters.

5. There is an inverse correlation in male students between hardiness components and social support way of coping, meaning that the more one seeks social support, the lower his control, commitment, and hardiness, which again proves that overprotection has a negative influence on a child with MSDs. As far as ways of coping are concerned, there were no remarkable correlations among female students.

Based on these results, we can draw the following conclusions about the hypotheses set forth:

1. The presence of MSDs will have an effect on hardiness levels among adolescents. This hypothesis is confirmed as components of hardiness among adolescents with MSDs are higher than of those with normal development (95, 5 versus 77,6).
2. Trait neuroticism is higher in adolescents with MSDs than in those with normal development. This hypothesis was partially confirmed as the adolescents with MSDs have high scores on neuroticism scale, because schoolchildren are undergoing daily challenges, but adolescents with normal development in 8th grade have an even higher level of neuroticism.

Thus, adolescents with MSDs are getting closer to the adult life, where they will have to deal with challenges. The ability to overcome these, correct attitude to the experience they gain, confidence in their own abilities, adaptive ways of coping behavior - all these must be assessed in advance, corrected as much as possible and today's schoolchildren must be prepared for a comfortable existence in society, developing their potential to the full.

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